*भारतीय मानक*

***Indian Standard***

**IS 201 : 2022**

# कपड़ा उद्योग के लिए जल के लिए गुणवत्ता सहिष्णुता

*( तीसरा पुनरीक्षण )*

# Quality Tolerances for Water for Textile Industry

*( Third Revision )*

ICS 13.060.25

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Water Quality for Industrial Purposes Sectional Committee, CHD 13

## FOREWORD

‘This Indian Standard was adopted by the Bureau of Indian Standards on recommendation of the Water Quality for Industrial Purposes Sectional Committee and approval of the Chemical Division Council’.

Objection to colour and turbidity in water used in textile industry is because of the fact that they cause streaking and straining. Iron and manganese strains cause other difficulties in processing even at low concentrators. The objection to hardness is in, many operations, especially, in scouring where soap curds may be produced, and in process where deposits of precipitated calcium and magnesium may stick to the material.

This standard is intended chiefly to cover the technical provisions relating to water for textile industry, and it does not include all the necessary provisions of a contract.

This Indian Standard was first published in 1950. The first revision of this standard was published in 1964 by incorporating requirements for corrosivity, colour, turbidity, manganese, algae and mould spores and odour. The second revision for this standard was published in 1992, in this revision requirements for sulphates, chlorides, aluminium and bicarbonates were incorporated while the tolerance limits for total hardness and iron were suitably modified.

The Committee felt a need to revise the standard with a view to update the standard based on the experience of last three decades and on the currently available data. In this third revision the following modification have been incorporated:

a) Amendment 1 and 2 have been incorporated;
b) Table 1 has been updated;
c) References, ICS No. have been updated; and
d) Other editorial changes have been done to bring the standard in the latest style and format of Indian Standards.

The composition of committee responsible for the formulation of this standard is given at Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

*Indian Standard*

# QUALITY TOLERANCES FOR WATER FOR TEXTILE INDUSTRY

*( Third Revision )*

## 1 SCOPE

**1.1** This standard prescribes the quality tolerances for water for textile industry.

## 2 REFERENCES

The standards listed below contain provisions which through reference in this text, which constitute provisions of this standard. At the time of publications, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards given below:

| *IS No.* | *Title* |
|---|---|
| 1622 : 1981 | Methods of sampling and microbiological examination of water (*first revision*) |
| 3025 (Part 4) : 2021 | Methods of sampling and test (physical and chemical) for water and waste water: Part 4 Colour (*second revision*) |
| 3025 (Part 10) : 1984 | Methods of sampling and test (physical and chemical) for water and waste water: Part 10 Turbidity (*first revision*) |
| 3025 (Part 11) : 2022 | Methods of sampling and test (physical and chemical) for water and waste water: Part 11 *p*H value (*second revision*) |
| 3025 (Part 21) : 2009 | Methods of sampling and test (physical and chemical) for water and waste water: Part 21 Total hardness (*second revision*) |
| 3025 (Part 23) : 1986 | Methods of sampling and test (physical and chemical) for water and waste water: Part 23 Alkalinity (*first revision*) |
| 3025 (Part 24/Sec 1) : 2022 | Methods of sampling and test (physical and chemical) for water and waste water: Part 24 Sulphates, Section 1 Gravimetric and Turbidity Methods (*second revision*) |
| 3025 (Part 32) : 1988 | Methods of sampling and test (physical and chemical) for water and waste water: Part 32 Chlorides (*first revision*) |
| 3025 (Part 53) : 2003 | Methods of sampling and test (physical and chemical) for water and waste water: Part 53 Iron (*first revision*) |
| 3025 (Part 55) : 2003 | Methods of sampling and test (physical and chemical) for water and waste water: Part 55 Aluminium (*first revision*) |
| 3025 (Part 59) : 2006 | Methods of sampling and test (physical and chemical) for water and waste water: Part 59 Manganese (*first revision*) |
| 17614 (Part 1) : 2021 | Water Quality — Sampling: Part 1 Guidance on the design of sampling programmes and sampling techniques |
| 17614 (Part 2) : 2021 | Water Quality — Sampling: Part 3 Preservation and handling of water samples |

## 3 TOLERANCES

### 3.1 Corrosivity

The water shall be non-corrosive when tested as per the method prescribed in Annex A.

### 3.2 Algae and Mould Spores

The water shall be free from algae and mould spores when tested according to the method prescribed in IS 1622.

### 3.3 Odour

The water shall be free from objectionable odour.

## 4 SAMPLING

Representative test samples of water shall be withdrawn as prescribed in **2** of IS 1622 and IS 17614 (Part 1) and IS 17614 (Part 2).

## 5 REQUIREMENTS

The water shall comply with the requirements as specified in Table 1 and Annex A

**Table 1 Requirement for Water for Textile Industry**

(*Clauses* 5)

| Sl. No. | Characteristic | Requirements for | | | Method of Test, Ref to |
|---|---|---|---|---|---|
| | | **General Purposes** | **Bleaching, Dyeing and Subsequent Processing** | **Wool Scouring** | |
| (1) | (2) | (3) | (4) | (5) | (6) |
| i) | Colour (Hazen units), *Max* | 20<br>(*see* Note 1 ) | 5 | 70 | IS 3025 (Part 4) |
| ii) | Turbidity, NTU, *Max* | 200 | 200 | 200 | IS 3025 (Part 10) |
| iii) | *p*H | | 6.0 to 8.5 | | IS 3025 ( Part 11 ) |
| iv) | Total hardness (as $CaCO_3$), mg/l, *Max* | 50<br>(*see* Note 2) | 200 | 200 | IS 3025 ( Part 21 ) |
| v) | Iron (as Fe), mg/l, *Max* | 0.25 | 0.1 | 0.1 | IS 3025 (Part 53) |
| vi) | Manganese (as Mn), mg/l, *Max* | 0.10 | 0.10 | 0.10 | IS 3025 (Part 59) |
| vii) | Iron (as Fe) and Manganese (as Mn) added together, mg/l, *Max* | 0.25 | 0.1 | 0.1 | IS 3025 (Part 53)<br>IS 3025 (Part 59) |
| viii) | Aluminium (as Al), mg/l, *Max* | 0.1 | 0.1 | 0.1 | IS 3025 (Part 55) |
| ix) | Sulphate (as $SO_4^{2-}$), mg/l, *Max* | 100 | - | - | IS 3025 (Part 24/Sec1) |
| x) | Chloride (as Cl), mg/l, *Max* | 100 | - | - | IS 3025 (Part 32) |
| xi) | Total alkalinity (as $CaCO_3$), mg/l, *Max* | 150 | 150 | 150 | IS 3025 (Part 23) |

NOTES

**1** When dark or medium dark dyeing is done, a relaxed maximum limit 20 may be permissible, but for whites and delicate shades, the limit shall not be relaxed.

**2** For processes which are not sensitive to hardness salts or internal sequestering agents are used, a maximum limit of 200 permissible.

## ANNEX A

(*Clauses* 3.1 and 5)

## TEST FOR CORROSIVITY

### A-1 PRINCIPLE OF THE METHOD

**A-1.1** This qualitative test determines the stability of a water with respect to calcium carbonate. The *p*H of the water is determined before and after treatment with calcium carbonate. Any increase in *p*H as a result of this test indicates corrosivity.

**A-1.2** If, due to non-availability of a *p*H meter, it is inconvenient to determine *p*H, the test is carried out by determining alkalinity of the water.

### A-2 REAGENT

### A-2.1 Precipitated Calcium Carbonate Pure

Place about 10 g of the powdered material in a 250 ml glass-stoppered bottle. Wash thrice with portions of the sample to be tested, by stirring, allowing to settle for several minutes and then pouring off the supernatant liquid while still turbid.

### A-3 PROCEDURE

**A-3.1** Determine the *p*H or total alkalinity (*see* **A-1.2**) of the sample as prescribed in IS 3025 (Part 11) or IS 3025 (Part 23).

**A-3.2** Take the glass-stoppered bottle containing washed calcium carbonate (see **A-2.1**), fill it up with the sample up to 250 ml mark and insert the stopper without allowing any air bubble to remain. Shake well to bring the powder in suspension throughout the bottle and set aside. Repeat shaking at frequent intervals for about 4 h. Finally, allow to stand overnight and then filter rapidly by decanting through a filter paper. Determine the pH or total alkalinity of the filtrate.

**A-3.3** The water shall be considered non-corrosive if the *p*H or total alkalinity determined in **A-3.2** is not greater than that determined in **A-3.1**.

## ANNEX B

(*Foreword)*

## COMMITTEE COMPOSITION

Water Quality for Industrial Purpose Sectional Committee, CHD 13

| *Organization* | *Representative(s)* |
|---|---|
| Bhabha Atomic Research Centre, Mumbai | SHRI K. P. BHATTACHARYYA (***Chairperson***) |
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